

ANNOTATIONES ZOOLOGICAE JAPONENSES

Volume 41, No. 4—December 1968

Published by the Zoological Society of Japan
Zoological Institute, Tokyo University

Helminth Fauna of Bats in Japan V

With 8 Text-figures

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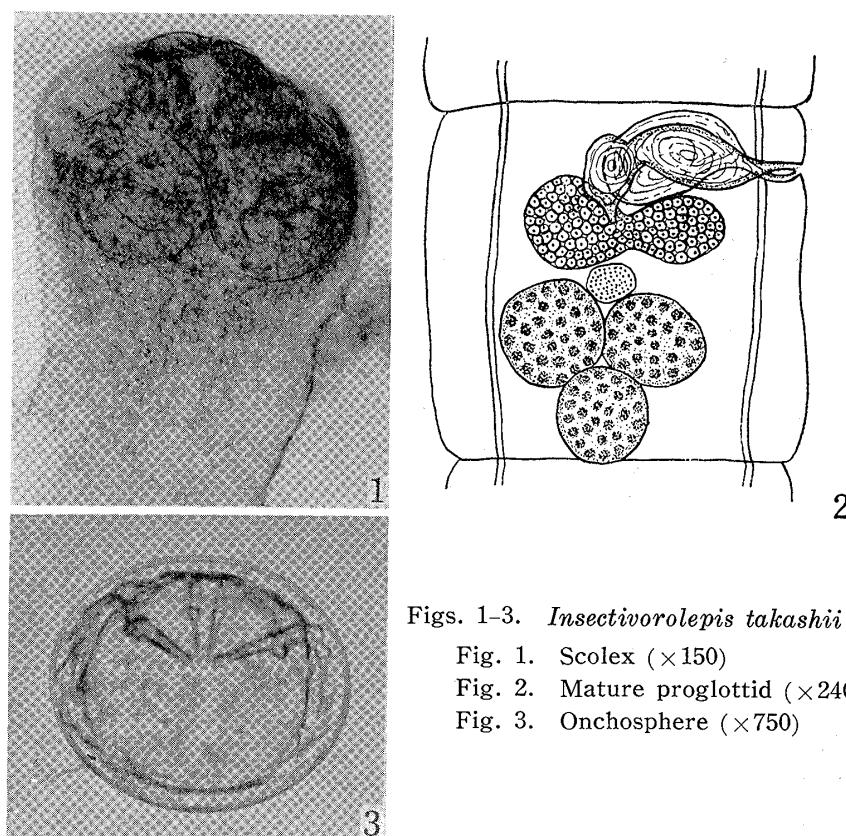
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(Communicated by T. UCHIDA)

ABSTRACT A new species and two species of hymenolepid cestodes from Japanese bats are described.

Insectivorolepis takashii n. sp.

On May 5, 1968, five common bats, *Rhinolophus ferrumequinum*, were collected by the author in an autigua of a manganese mine at Mugegawa Town in Gifu Prefecture. Four of the five bats were infected with one or three tapeworms. On the basis of a study of six tapeworms which all appeared morphologically identical, these specimens are believed to represent a new species, *Insectivorolepis takashii*. Measurements are all given in millimeters unless otherwise stated.

Description: Strobila 23 to 32 long and 0.595 to 0.664 in maximum width. Proglottide margins not serrate. Scolex unarmed, 0.194 to 0.263 in diameter. Discoidal suckers aspinous, 0.083 to 0.097 by 0.111 to 0.124. Rostellum absent. Neck 0.277 to 0.289 long and 0.138 to 0.152 wide. Fully mature proglottides with sperm-distended seminal receptacle first appears at from 50 to 60 segments from neck. Immature and early mature segments longer than wide; late mature segments nearly square. Genital pores marginal and unilateral, situated always within 1/5 the length of proglottid from its anterior end. Papillae lacking. Cirrus sac muscular, small, 0.053 by 0.018. Testes, three in number, one poral and two aporal, more or less ellipsoidal, 0.042 by 0.049, in fully mature segments. The three testes, close together, form a triangle. Poral and one aporal testis generally located transversely in a straight-line along ovary and one aporal testis usually posteromesad to the others. External and internal seminal vesicle both prominent; the former 0.032 to 0.035 by 0.035, the latter 0.021 to 0.025 by 0.067. Saccate seminal receptacle prominent in mature proglottides, attains maximum size of 0.042 to 0.074 by 0.042. Ovary bipartite, 0.074 by 0.046, transversely elongated, anterior to median line of proglottid. Vitellarium 0.018 by 0.035, compact, immediately posteroventrad to ovary. Uterus appears early in strobila as spherical body which gradually enlarges,

Figs. 1-3. *Insectivorepis takashii*

- Fig. 1. Scolex ($\times 150$)
 Fig. 2. Mature proglottid ($\times 240$)
 Fig. 3. Oncosphere ($\times 750$)

not filling entire gravid segment. Outer egg membrane 0.042 by 0.046, inner one 0.040 by 0.042. Oncosphere spherical, 0.025 to 0.032 by 0.035, embryonal hook, with distinct shaft and curved claws, 0.012 to 0.014 long.

Discussion: From the following external and internal characters—unarmed suckers, absence of rostellum, ovary transversely elongated and uterus forming ovoid median sac, but not filling entire segment—the present species seems to be eligible to the genus *Insectivorepis*. So far as the author can ascertain, the species belonging to *Insectivorepis* amount to six. Among them, the present species closely resembles *Insectivorepis yosidai* Sawada, 1967 found from bats. However, it may be distinctly differentiated from *I. yosidai* by length of worm, arrangement of testes, oncosphere-size and other morphological characters.

Host: *Rhinolophus ferrumequinum*

Habitat: Small intestine

Locality and Date: Mugegawa Town, Gifu Prefecture: May 5, 1968

Type specimen: Biological Laboratory, Nara University of Education, Nara Japan.

Vampirolepis hidaensis Sawada, 1967

Specimens of the small bat, *Miniopterus schreibersi*, were collected in a race-way of the water power plant at Oguti Village in Ishikawa Prefecture on July 5, 1968. One of eleven bats was infected with only one tapeworm. As the



Figs. 4-5. *Vampirolepis hidaensis*
Fig. 4. Scolex ($\times 112$) Fig. 5. Rostellar hooklet ($\times 1425$)

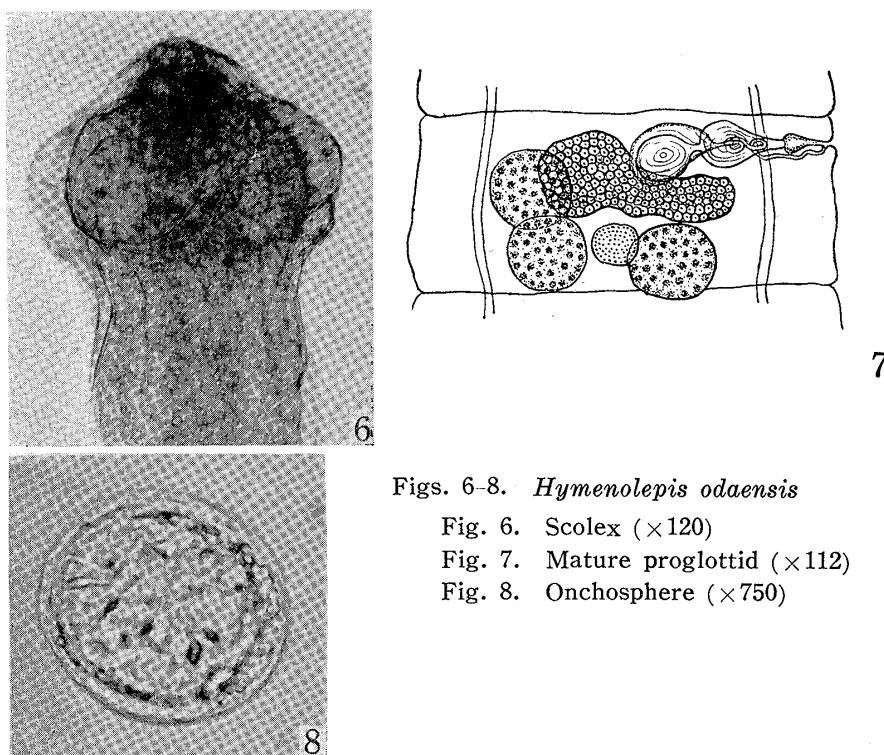
tapeworm was in the larval stage, the mature and senile segments were not found. But, from the shape and structure of the scolex, and also from the length and number of rostellar hooklets, the present specimen appears to belong to *Vampirolepis hidaensis* Sawada, 1967.

Description: *Vampirolepis* Spassky, 1954. Larval strobila 3.8 in length. Scolex 0.263 wide and 0.346 long, strongly set off from neck region; rostellum well developed, armed with a single row of 30 hooklets, each measuring 0.021 long; rostellar sheath very large, 0.194 by 0.111; suckers discoid, unarmed, 0.083 in diameter. Neck 0.083 in width.

Hymenolepis odaensis Sawada, 1968

A colony including four species of common bats *Rhinolophus ferrumequinum*, *Miniopterus schrebersi*, *Rhinolophus cornutus* and *Myotis macrodactylus*, lives in a cave made by the erosion of the sea, Shojodo, at Oumigawa in Niigata Prefecture. As the bats in this cave have been designated as a natural rarity since 1929, they have been protected for a long time. Although, up to the present time, the ecological investigation of these bats has been made several times, no study on the endoparasites of the bats has ever been attempted. On August 5, 1968, sixty-one species collected in the cave were examined for parasites. One species of tapeworm was recovered from one *Rhinolophus ferrumequinum* and only one of 51 *Miniopterus schrebersi*, and no tapeworms were found in 7 specimens of *Myotis macrodactylus* and 2 *Rhinolophus cornutus*. On the other hand, no termatodes or nematodes were found in any of the bats.

Specific diagnosis: *Hymenolepis* Weinland, 1858. Worm length 57 to 62, greatest width 0.672 to 0.692. Scolex 0.277 to 0.290 broad, 0.221 to 0.249 long. Rostellum absent. Sucker discoid, 0.124 in diameter. Neck, 0.152 to 0.180 width, 1.175 to 1.203 long. Genital pore unilateral, located in the anterior to the middle of each proglottid margin. Testes 3, in triangular arrangement, 0.056 to 0.070

Figs. 6-8. *Hymenolepis odaensis*Fig. 6. Scolex ($\times 120$)Fig. 7. Mature proglottid ($\times 112$)Fig. 8. Oncosphere ($\times 750$)

by 0.074 to 0.077. Cirrus pouch small, not reaching longitudinal excretory vessel, 0.025 by 0.007 to 0.014. Internal seminal vesicle, 0.077 by 0.049, and external seminal vesicle 0.070 by 0.053. Ovary well-developed, bipartite, transversely elongated, located slightly anterior to median line of proglottid. Seminal receptacle oval, 0.021 to 0.070 by 0.074 to 0.077. Vitelline gland, 0.056 to 0.070 by 0.035 to 0.053, postovarian. Uterus saccular, lobed, filling entire gravid proglottides. Egg spherical, 0.035 to 0.042 in diameter. Oncosphere, 0.028 in diameter; embryonal hook 0.011 in length.

ACKNOWLEDGEMENT

Thanks are due to Mr. Maeda, College of Agriculture, Hokkaido University and Messers Deguti and Tanaka, students of Nara University of Education, for generous assistance in collecting the bats in the cave.

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